

FIG. 1

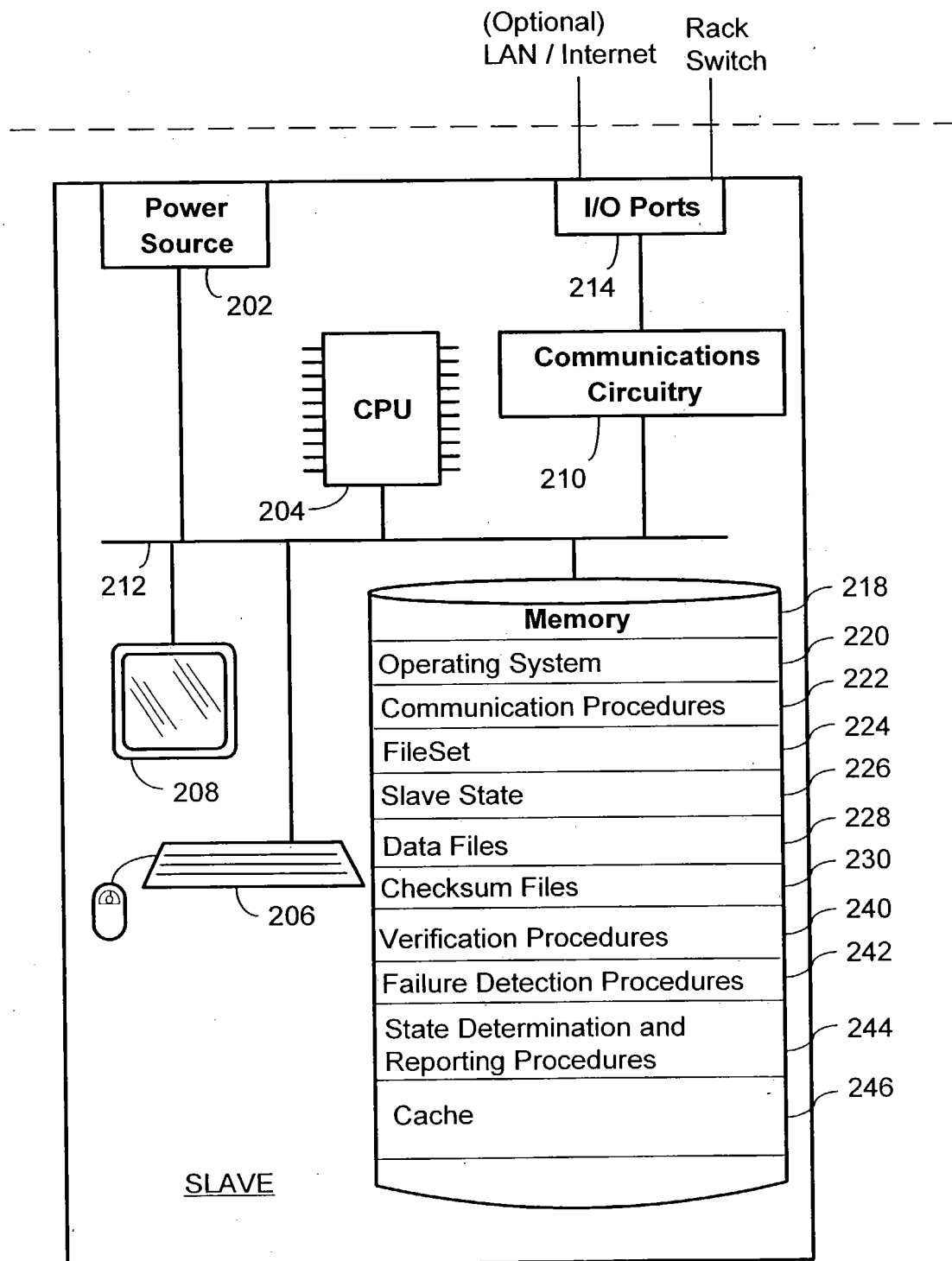


FIG. 2A

FileSet 224

| FileID | Version |
|------------|---------|
| File001 | 022 |
| File002 | 025 |
| File002abc | 002 |

⋮

⋮

FIG. 2B

Slave State 226

| FileID | Version | File Size |
|------------|---------|-----------|
| FileSet07 | 096 | 10KB |
| File001 | 022 | 0 |
| File002 | 025 | 16MB |
| File002abc | 002 | 64MB |
| ⋮ | ⋮ | ⋮ |

FIG. 2C

Data File 228

| | | |
|---------|---------|-----|
| Block 1 | Block 2 | ... |
|---------|---------|-----|

Checksum File 230

| | | |
|-----|-----|-----|
| CS1 | CS2 | ... |
|-----|-----|-----|

FIG. 2D

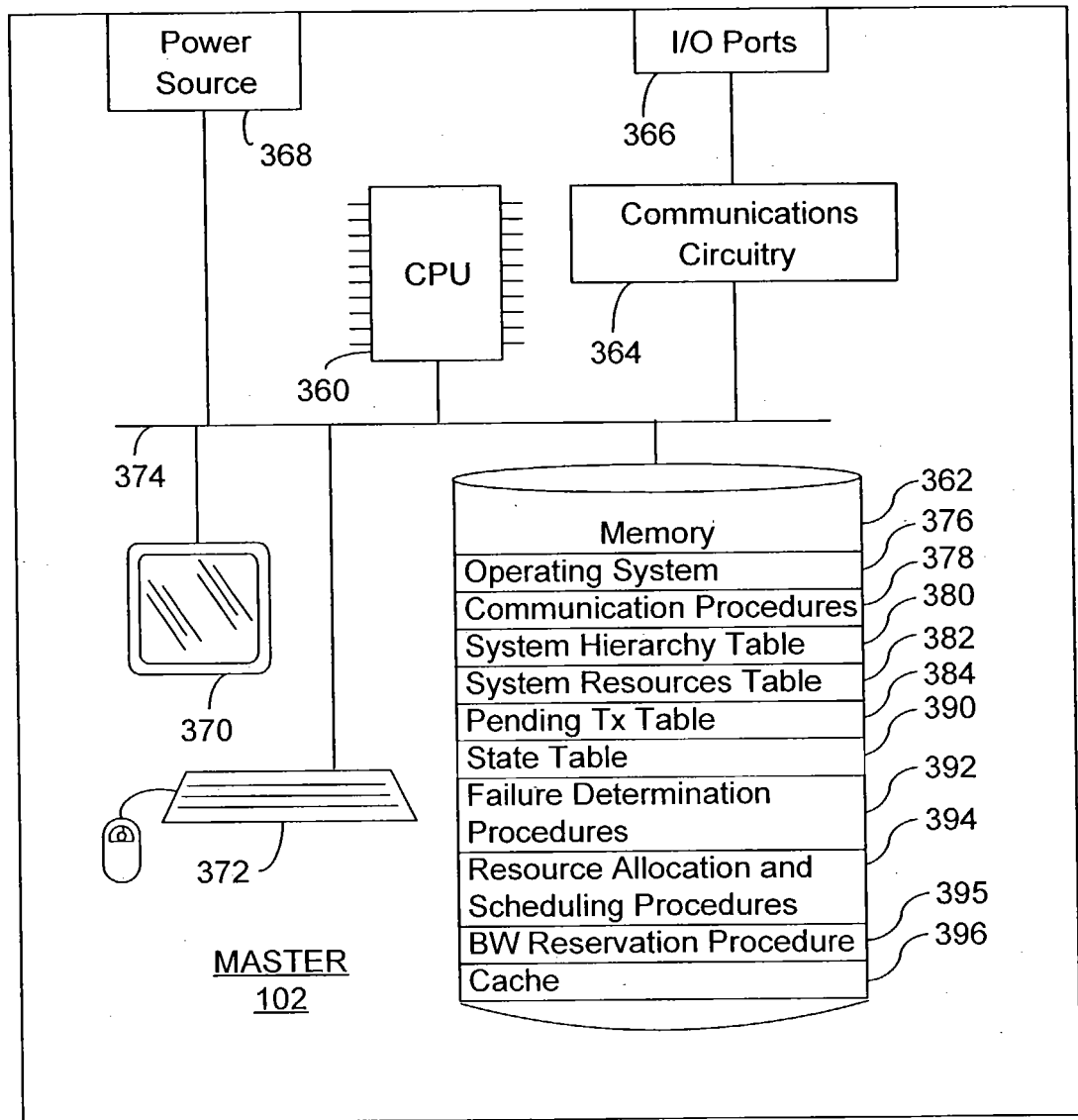


FIG. 3A

Slave Level Graph
386

System Hierarchy Table 380

| Slave ID | Slave Location |
|-----------|----------------|
| Slave 1 | R1 |
| Slave 2 | R1 |
| ... | R1 |
| Slave 17 | R2 |
| Slave 18 | R2 |
| ... | R2 |
| Slave 134 | R35 |
| Slave 135 | R35 |
| ... | ... |
| Slave 452 | R139 |

Rack Level Graph
388

| Rack ID | Rack Location |
|----------|---------------|
| Rack 1 | DC1 |
| Rack 2 | DC1 |
| ... | DC1 |
| Rack 35 | DC2 |
| ... | ... |
| Rack 120 | DC4 |
| ... | ... |
| Rack139 | DC4 |

FIG. 3B

System Resources Table 382

| Slave ID | Inbound BW | In BW in use | Outbound BW | Out BW in use |
|-----------|------------|--------------|-------------|---------------|
| Slave 1 | 100 | 0 | 100 | 20 |
| Slave 2 | 100 | 20 | 100 | 80 |
| ... | ... | ... | ... | ... |
| Slave 34 | 100 | 80 | 100 | 10 |
| Slave 35 | 70 | 10 | 70 | 10 |
| ... | ... | ... | ... | ... |
| Slave 159 | 100 | 0 | 100 | 80 |
| Slave 160 | 100 | 10 | 100 | 0 |
| ... | ... | ... | ... | ... |
| Salve 756 | 100 | 0 | 100 | 0 |

Slave Level Bandwidth Graph 321



| Rack ID | Inbound BW | In BW in use | Outbound BW | Out BW in use |
|----------|------------|--------------|-------------|---------------|
| Rack 1 | 300 | 0 | 300 | 120 |
| Rack 2 | 300 | 40 | 300 | 80 |
| ... | ... | ... | ... | ... |
| Rack 17 | 300 | 80 | 300 | 0 |
| ... | ... | ... | ... | ... |
| Rack 34 | 250 | 100 | 250 | 60 |
| ... | ... | ... | ... | ... |
| Rack 123 | 300 | 10 | 300 | 0 |

Rack Level Bandwidth Graph 325



| Datacenter ID | Inbound BW | In BW in use | Outbound BW | Out BW in use |
|---------------|------------|--------------|-------------|---------------|
| DC 1 | 500 | 0 | 500 | 120 |
| DC 2 | 500 | 40 | 500 | 80 |
| ... | ... | ... | ... | ... |
| DC 4 | 400 | 80 | 400 | 0 |

Datacenter Level Bandwidth Graph 327



Trunk Level Bandwidth Graph 328



| Trunk ID | BW | BW in use | Start | End | Latency |
|----------|-----|-----------|-------|-----|---------|
| T1 | 25 | 0 | DC1 | DC2 | 100 ms |
| T2N | 50 | 40 | DC1 | DC3 | 100 ms |
| T2S | 100 | 100 | DC3 | DC1 | 50 ms |
| T3W | 30 | 0 | DC3 | DC4 | 45 ms |
| T3E | 30 | 20 | DC2 | DC4 | 15 ms |
| T4 | 30 | 20 | DC2 | DC3 | 35 ms |

FIG. 3C

Pending Tx Table 384

| Copy From | Copy To | BW used | End Time | Reserve Flag |
|-----------|-----------|---------|----------|--------------|
| Slave 1 | Slave 23 | 10 | 8:25 | 0 |
| Slave 2 | Slave 134 | 20 | 8:21 | 0 |
| ... | ... | ... | ... | ... |
| Slave 34 | Slave 35 | 10 | 8:22 | 0 |
| Slave 35 | Slave 87 | 10 | 10:36 | 1 |
| ... | ... | ... | ... | ... |
| Slave 89 | Slave 191 | 10 | 9:25 | 1 |
| ... | ... | ... | ... | ... |
| Slave 189 | Slave 199 | 100 | 8:23 | 0 |

FIG. 3D

State Table 392

| Resource ID | State | Failure Count | Attempts | | |
|-------------|-------|---------------|----------|--------------|---------------|
| T1 | 1 | 10 | 255 | | |
| ... | ... | ... | ... | | |
| TJ | 1 | 0 | 505 | | |
| DC1 | 1 | 1 | 543 | | |
| ... | ... | ... | ... | | |
| DCK | 1 | 0 | 123 | | |
| Rack 123 | 1 | 5 | 5678 | | |
| Rack 124 | 1 | 0 | 1003 | | |
| ... | ... | ... | ... | | |
| Rack N | 1 | 8 | 102 | | |
| | | | | Last Contact | State Pointer |
| Slave 1 | 1 | 2 | 122 | 01:02:03 | |
| Slave 2 | 0 | 50 | 98 | 00:01:00 | |
| Slave 3 | 1 | 1 | 57 | 01:02:08 | |
| ... | ... | ... | ... | | |
| Slave M | 1 | 1 | 89 | 01:02:01 | |

Slave3-R2-DC1 State:

| FileID | Version | File Size | Failure Cnt | Attempts | State | Want Newest |
|------------|---------|-----------|-------------|----------|-------|-------------|
| FileSet07 | 096 | 10KB | 0 | 7 | 1 | 1 |
| File001 | 032 | 0 | 0 | 0 | 0 | 0 |
| File002 | 035 | 16MB | 1 | 4 | 1 | 0 |
| File003abc | 002 | 64MB | 2 | 9 | 1 | 0 |
| ... | ... | ... | ... | ... | ... | ... |

Pointer to list of
slaves with same files

600

List of slaves having
the files in FileSet07

602

FIG. 3E

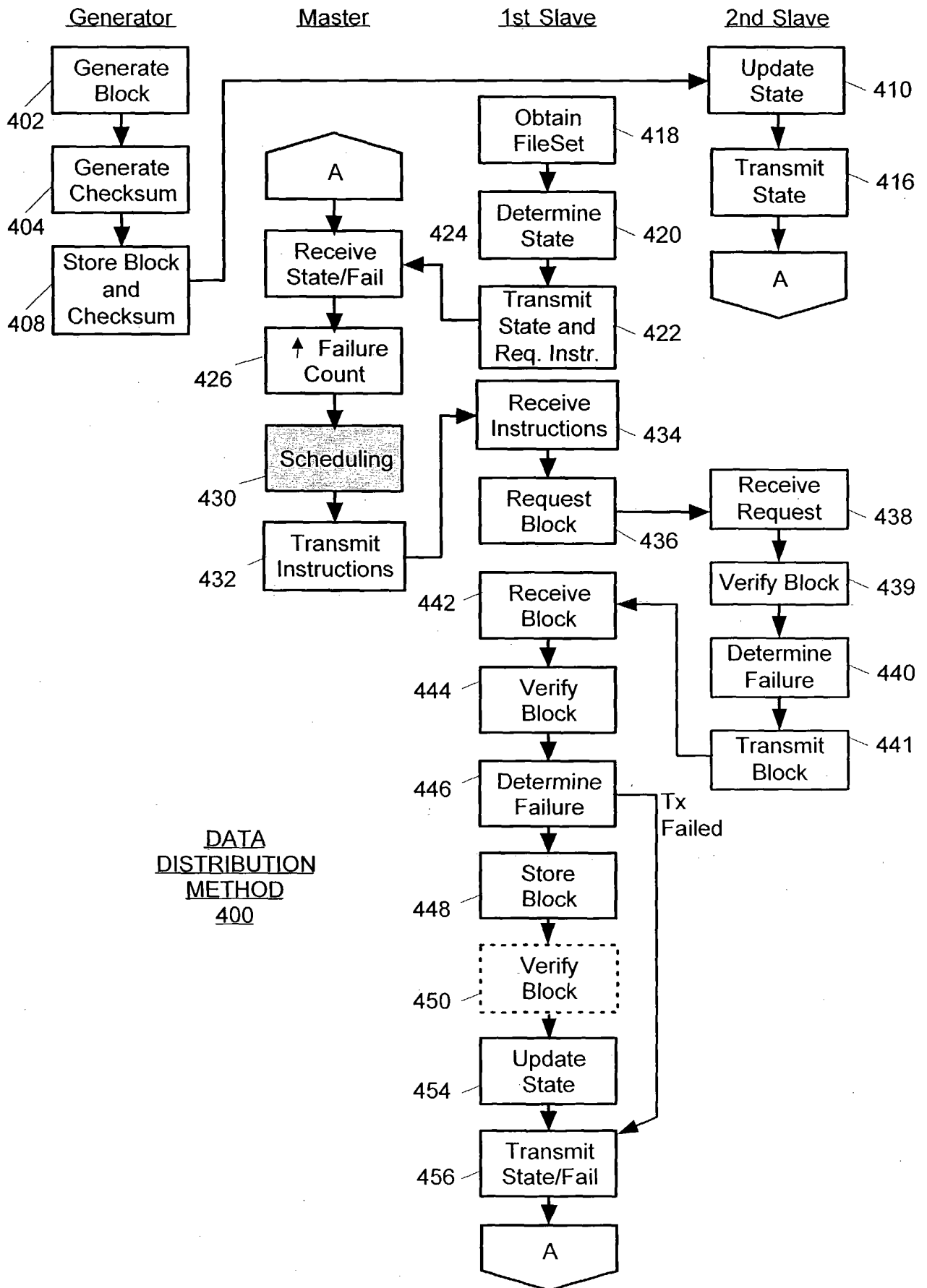


FIG. 4

LOCAL SCHEDULING 500

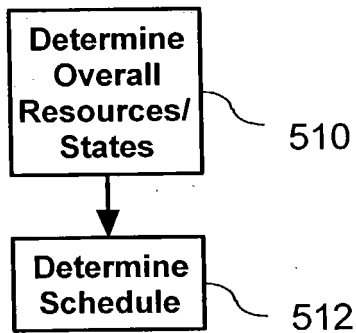


FIG. 5A

INCREMENTAL SCHEDULING 502

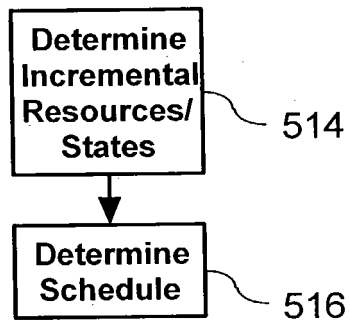


FIG. 5B

GLOBAL SCHEDULING 504

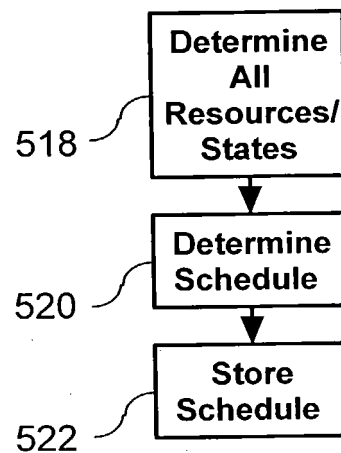


FIG. 5C

HIERARCHICAL PARTITIONED SCHEDULING 506

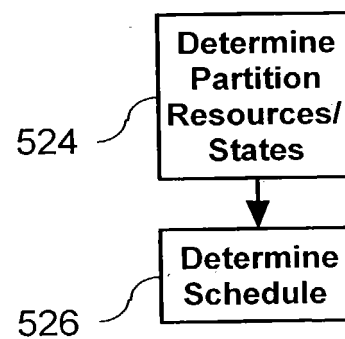


FIG. 5D